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A SPECIES OF COMMELINA.

By Gilbert Kent Preston, P.D.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy. No. 176.

The attention of Professor Trimble was called to a species of Commelina (supposed to be *C. virginica*) by Godfrey Aschmann, a florist of Philadelphia, whose observations led him to believe that it was of medicinal value. He found that, when made into an ointment and applied to a surface wound, it not only stops the bleeding, but also exhibits remarkable healing properties.

That the plant does possess hemostatic properties is very probable, as there are several plants in Mexico belonging to this same family that are of notable therapeutic value. Alfonso Herrera, in American Journal of Pharmacy, 1897, p. 290, describes these plants under the name of "Yerba del Pollo." He states that "the most distinguished physicians use the extract of Commelina as a kind of hemostatic in the treatment of metrorrhagia and hemoptysis. They employ it, too, as an active remedy against leucorrhœa, and as a general hemostatic in capillary hemorrhage." He was unable, however, to conclusively determine to what these properties were due, although he feels justified in attributing them to either the potassium chloride or a proteid principle.

During the term of 1895 and 1896, Mr. G. L. Genz, Ph.G., analyzed the plant in the chemical laboratory of the Philadelphia College of Pharmacy, but found nothing to which its virtues could, with satisfaction, be attributed. The material upon which he worked

had been gathered about two years before. He was unable to find a glucoside, but, like the writer, found evidence in the ethereal extract of a small amount of a substance which gave precipitates with alkaloidal reagents; while more of the same substance was found by him in the absolute alcohol extracts. The author has had the same experience in the present investigation. The specimen of Commelina under examination was collected on the banks of the Wissahickon near its junction with the Schuylkill. On careful study of the material, by the aid of the manuals and comparison with the specimens in the Martindale Herbarium in the Philadelphia College of Pharmacy, it was evident that the species was not *C. virginica*, but probably either *C. nudiflora* or *C. communis*.

CHEMICAL ANALYSIS.

The fresh plant was dried at a temperature of 30° C. for several days, until it was in a fit condition for grinding.

The ground material lost 9·65 per cent. of moisture when dried to a constant weight at 110° C.

Upon incineration it yielded 15·33 per cent. of ash. The ash was brownish-gray in color, and retained somewhat the shape of the particles of the original material; 38·03 per cent. of the ash was soluble in water. The salts of the aqueous solution consisted chiefly of potassium chloride and sulphate, and a much smaller quantity of potassium carbonate. Hydrochloric acid dissolved 44·72 per cent. of the ash, from the residue insoluble in water; this amount included the carbonates which were decomposed by the acid. The solution in hydrochloric acid contained calcium, magnesium, iron, and phosphoric oxide. The remaining 17·25 per cent. of the ash was composed of siliceous matter.

A portion of the ground plant was macerated with cold water for some minutes and the mixture then filtered. The filtrate had a feebly acid reaction toward litmus paper. It also reacted as follows:

Ferric chloride caused no change in appearance.

Gelatin had no effect.

Gelatin and alum behaved likewise.

Bromine water produced no change.

Ammonio-ferric sulphate was without effect.

Calcium hydrate made a yellowish turbidity.

Basic lead acetate caused a gelatinous precipitate.

Neutral lead acetate yielded a precipitate of the same character.

Barium chloride gave no precipitate.

Silver nitrate, acidified with nitric acid, threw down a brownish-white precipitate, which was soluble in ammonium hydrate; on heating this ammoniacal solution a reduction to metallic silver occurred.

FIG. 1.

Gold chloride, acidified with hydrochloric acid, was reduced to metallic gold on heating.

These behaviors showed the absence of tannic and gallic acids, but the presence of some other substance having reducing power on salts of gold and silver.

The plant material that was left undissolved by cold water was boiled with water for a few minutes, the mixture filtered and the clear filtrate allowed to become cold. It was then tested with potassium tri-iodide, which gave the characteristic blue-color reaction for starch.

Following this preliminary examination, a proximate analysis of the ground plant was made according to Dragendorff's scheme, with the results hereinafter stated.

Petroleum ether removed 1·56 per cent. of extractive matter consisting of 0·13 per cent. of caoutchouc, 0·48 per cent. of wax and 0·95 per cent. of fat.

Ether, U.S.P., 1890, extracted 1·24 per cent. of the weight of the ground plant; 14·54 per cent. of this extract was soluble in water.

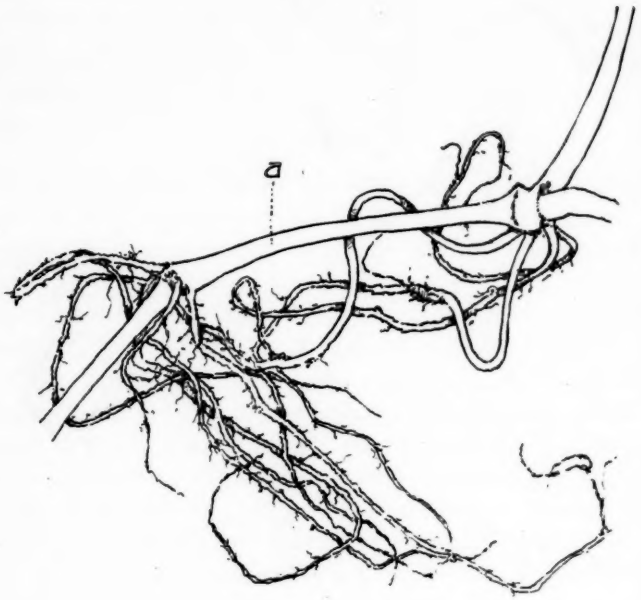

FIG. 2.

The aqueous solution had an acid reaction toward litmus paper; it reacted as follows:

Calcium hydrate produced a copious, reddish, flocculent precipitate.

Both normal and basic lead acetate gave precipitates of the same kind as caused by calcium hydrate.

Ammoniacal silver nitrate solution was reduced on the application of heat. Gold chloride solution was also reduced when heat was applied.

Fehling's solution was reduced by the plain filtrate upon warm-

ing, and after heating some of the plain filtrate with acid and again applying Fehling's solution, an increased reduction of the latter took place.

Mayer's reagent gave a very slight cloud.

Potassium tri-iodide gave still less cloud.

A portion of the solution which gave these reactions was acidified with diluted sulphuric acid, placed in a separating funnel, and

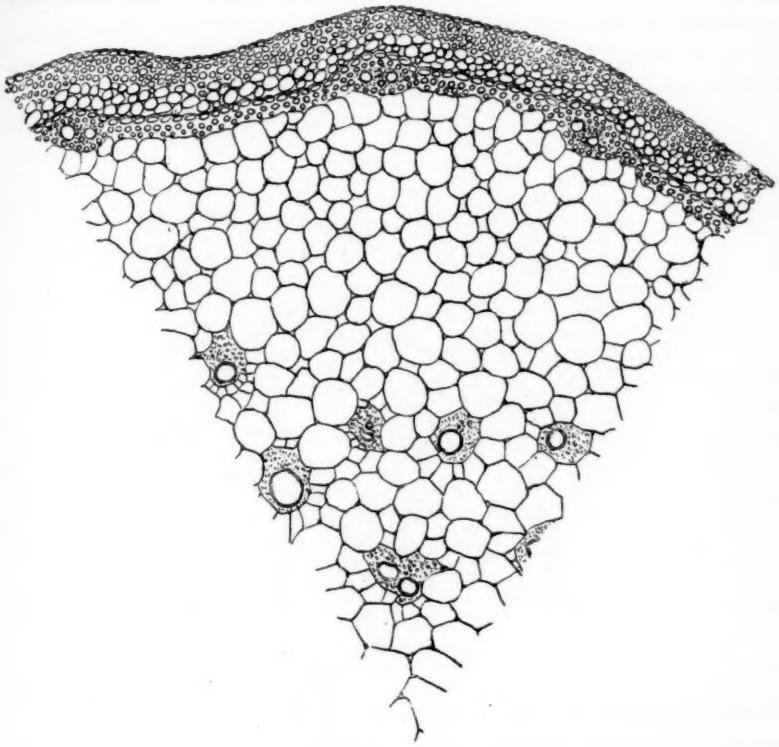

FIG. 3.

agitated with two successive portions of petroleum benzin, and afterward with two portions each of ether and chloroform. The two lots of each solvent were mixed, after being separated from the watery layer, and allowed to spontaneously evaporate. A reddish residue was left upon evaporation of the benzin. It was soluble in water; the solution possessed no reducing power on gold and silver salts, but it showed a reducing action on Fehling's solution, and,

after boiling the liquid under investigation with acid, a greater reduction of Fehling's solution occurred.

Neither ether nor chloroform removed anything from the acidified aqueous solution with which they had been agitated. The acidified aqueous solution was then rendered alkaline with ammonium hydrate, and again agitated in a separating funnel with benzin, ether and chloroform, as previously described. The benzin once more removed a small amount of reddish substance, which dissolved

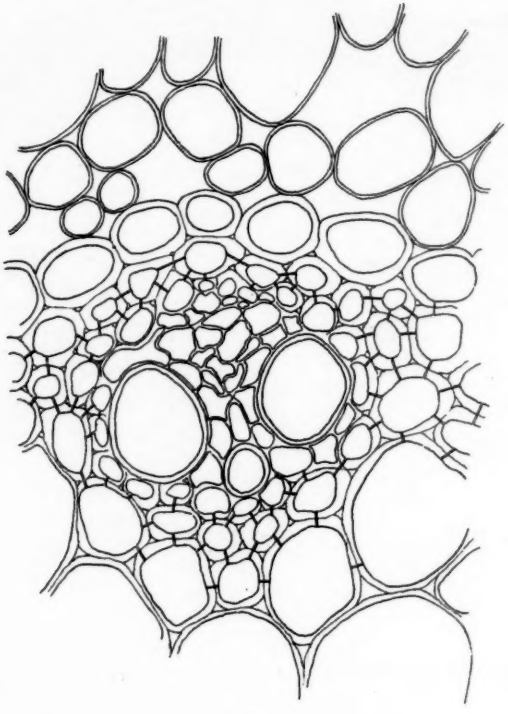

FIG. 4.

in water and reacted with Fehling's solution, as did the substance removed by benzin from the acid solution. Gold and silver salts were not reduced by this substance either. The treatment with ether removed some substance having the same character as that material taken out by benzin. Mayer's reagent and potassium triiodide gave no evidence of alkaloids in the substances extracted from the alkaline aqueous solution.

That part of the ether extract of the plant which was insoluble in water was treated with alcohol. This solvent dissolved 67·69 per cent. of the extract, leaving 17·77 per cent. of insoluble matter. The alcoholic solution gave the following evidence of resinous matter; the addition of water caused the precipitation of greenish resinous substance; alcoholic solution of ferric chloride gave a dark green color; alcoholic solution of lead acetate produced a green flocculent precipitate. The small amount of the ether extract, which water and alcohol failed to dissolve, was also insoluble in aqueous solution of potassium hydrate; alcoholic solution of potassium hydrate dissolved it, however, and it proved to be a mixture of chlorophyll and resinous matter.

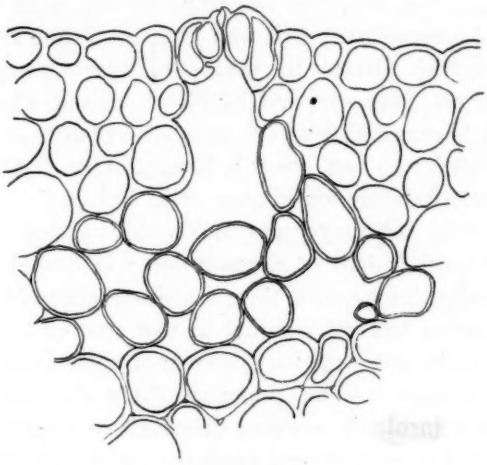

FIG. 5.

After the exhaustion with petroleum ether and ether, the plant yielded 1·04 per cent. of matter to the solvent action of absolute alcohol. Water dissolved 84·97 per cent. of the extract. The aqueous solution had a slight acid reaction toward litmus paper. It contained potassium chloride. A portion of the solution, acidified with diluted sulphuric acid, gave a copious red precipitate with Mayer's reagent; another portion, prepared in the same manner, yielded a copious reddish precipitate with potassium tri-iodide. Salts of silver and gold were reduced by still other portions of the aqueous solution of the alcoholic extract. Some of the same solu-

tion was agitated with benzin, ether and chloroform in the manner described under the treatment of the ether extract. The benzin and ether removed small quantities of matter from both acidified and alkaline solution. This matter dissolved in water, and afforded neutral solutions, which were without effect on salts of gold and silver. Nor were alkaloids indicated in the solutions by Mayer's reagent or potassium tri-iodide. But Fehling's solution was reduced by the plain aqueous solutions, and, after heating portions of the solutions with acid and again applying this reagent, more cuprous oxide was precipitated. Chloroform removed only a minute quantity of matter from either the acidified or alkaline aqueous solution of the alcoholic extract. Glucose and saccharose were tested for in another portion of the aqueous solution of the alcoholic extract. The solution was first treated with lead acetate, which caused a precipitate; this was filtered off, the excess of lead removed from the filtrate by means of hydrogen sulphide, the resulting lead sulphide removed by filtration, and all traces of hydrogen sulphide expelled from the filtrate by boiling it. The liquid was then divided into two equal volumes. One of these volumes was tested quantitatively for glucose with Fehling's solution; 0·03 per cent. of this substance was indicated by the cupric oxide weighed. The other half of the solution was boiled with acid to invert any saccharose present, then made alkaline and treated with Fehling's solution, but no increase in the amount of cupric oxide was found, thereby showing the absence of saccharose. With the exception of a slight residue, that part of the absolute alcohol extract which was insoluble in water dissolved in alcohol of ·820 sp. gr. The alcoholic solution was rendered turbid by the addition of water to it; it gave a slight reddish coloration with alcoholic solution of ferric chloride, and a reddish precipitate when mixed with alcoholic solution of lead acetate.

Cold water dissolved 16·34 per cent. of organic solids from the plant, after its treatment with the solvents already mentioned. The solution of these solids had an acid reaction toward litmus paper. When the solution was mixed with five times its volume of alcohol, a precipitate was produced. It amounted to 3·40 per cent. Lassaigne's test revealed the presence of a trace of nitrogen in the precipitate, which must, therefore, have contained only a small amount of albuminous matter, and consisted almost entirely of mucilage; 0·41

per cent. of glucose was also found. Saccharose was not found. The precipitate caused by the addition of lead acetate to the solution of the water extract, in the examination for sugars, was suspended in water and decomposed with hydrogen sulphide. The lead sulphide was filtered off, and, after expelling the hydrogen sulphide by boiling, the filtrate was tested with ammoniacal silver nitrate solution and gold chloride solution, both of which were reduced.

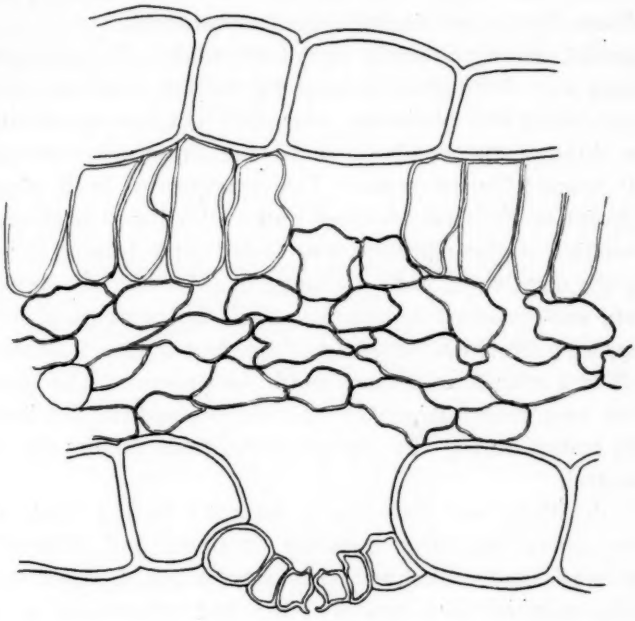

FIG. 6.

The plant was next treated with a weak solution of sodium hydrate, in water, but an accidental loss of some of the liquid extract prevented an estimation of the dissolved substances. Neither mucilage nor albuminous matter was found in this extract.

Cold water moderately acidulated with hydrochloric acid extracted 13·30 per cent. of organic solids from the plant. The dissolved organic matter was not precipitated by making the solution alkaline with ammonium hydrate, or even upon the further addition of several volumes of alcohol; 0·14 per cent. of phosphates were precipi-

tated when the acidulated water extract was rendered alkaline with ammonium hydrate.

In order to estimate the starch of the plant, the residue of the latter, from the foregoing extractions, was boiled with 5 per cent. hydrochloric acid for three hours to hydrolize the starch. The resulting glucose was treated with Fehling's solution, and the extent to which this reagent was acted on indicated the presence of 0·48 per cent. of starch.

After the conversion of the starch there remained 30.95 per cent. of cellulose, lignin and similar organic substances.

A special search was made for volatile acids. For this purpose a condenser was thoroughly cleaned by boiling distilled water in a flask into which the plant was afterward put, and conducting the vapors through the condenser until the drippings were perfectly neutral toward litmus paper. Ten grammes of fresh plant were then placed in the flask, distilled water added, and heat reapplied. The reaction of the distillate was tested with litmus, at intervals during the distillation, but no change in color was produced. The distillate was returned to the flask, and the contents of the latter acidified with diluted sulphuric acid, for the purpose of decomposing any salt of a volatile acid which might be present. The contents of the flask were then subjected to distillation, and the distillate occasionally tested during the process with litmus paper; the reaction was neutral.

The distillate was once more returned to the flask containing the plant, and the contents strained and filtered. The filtrate was made alkaline with ammonium hydrate and successively agitated with benzin, ether and chloroform in a separating funnel, but no evidence of alkaloids was obtained, from the small amounts of organic matter which these solvents removed, upon the addition of Mayer's reagent, potassium tri-iodide, picric acid, phosphotungstic acid, and gold chloride to the acidified aqueous solution of this matter. When heated with them, the substance in solution had no reducing effect on either ammoniacal silver nitrate or gold chloride solutions. The alkaline aqueous liquid with which the benzin, ether and chloroform had been agitated was supersaturated with diluted sulphuric acid. A flocculent precipitate was produced by this treatment, but it redissolved in the course of a few minutes. This solution was divided into four

portions, and tested for alkaloids with Mayer's reagent, picric acid, potassium tri-iodide and phosphotungstic acid. All of these reagents gave small, flocculent precipitates, but they may have been due to albuminous matter, and not to alkaloids. Another special search was made for alkaloids by macerating 12 grammes of fresh plant (dried) with alcohol of ·820 specific gravity for several days. The alcoholic liquid was strained off, filtered clear, and then evaporated to dryness on a water-bath. The residue was treated with water previously acidified with diluted sulphuric acid, and the insoluble matter separated by filtration. The filtrate reacted for alkaloids as follows: phosphotungstic acid gave a large, whitish precipitate; potassium tri-iodide, Mayer's reagent and gold chloride gave slight precipitates; picric acid, tannic acid, mercuric chloride and platinic chloride gave no precipitates.

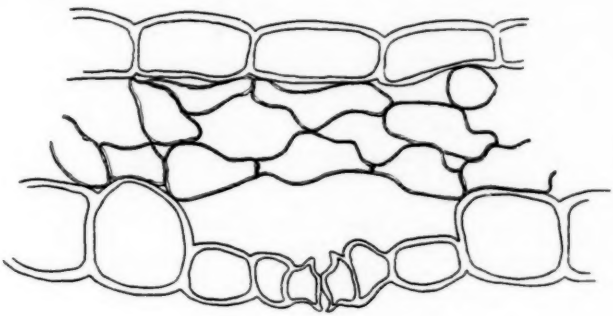

FIG. 7.

The existence of an alkaloidal substance in the plant is an unsettled matter, as the tests for it were in no case satisfactory, partly because of the very small amounts of the substances yielding the tests which could be separated.

Some of the last-mentioned filtrate which was tested for alkaloids was made alkaline with potassium hydrate and warmed with Fehling's solution, which reagent was reduced. An exactly equal volume of the same filtrate was boiled with some diluted sulphuric acid, then made alkaline and treated with Fehling's solution, as in the preceding case, when an increased amount of cuprous oxide was deposited. While this action is not taken as conclusive evidence of a glucoside, still, considering it in connection with behaviors of the same character noticed in the proximate analysis, it points to the

presence of a substance allied to the glucosides. That it is not saccharose is proved by the fact that this and similar sugars were not found in the plant, inasmuch as that the substance is removed from its aqueous solution by benzin and ether. That it is precipitated by lead acetate is shown by the fact that an aqueous solution which has been precipitated with that reagent and filtered does not develop an increased action on Fehling's solution by being boiled with acid. That it is not the substance which causes the reduction of gold and silver salts, nor the reactions with the alkaloidal reagents, is shown by the fact that the substances which affected Fehling's solution did not always influence the other reagents.

It has not been shown by the analytical data whether the sub-

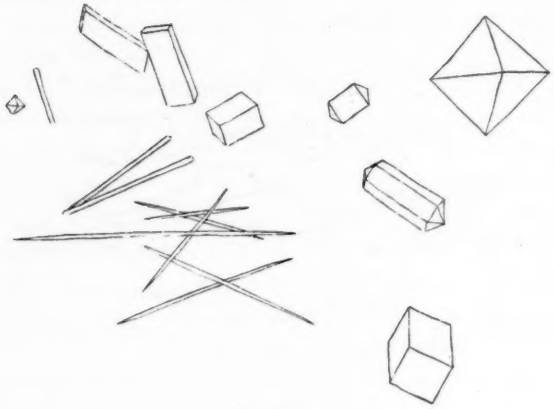

FIG. 8.

stance which reduces the gold and silver salts and that which reacts somewhat like an alkaloid are identical or distinct.

And, finally, to what the plant owes its reputed medicinal effect is still an open question.

BOTANICAL EXAMINATION.

The systematic part of the work, in the identification of the species common in the locality where the specimens under examination were obtained, requires still some investigation. Suffice it to say that the specimen was not *C. virginica.* The latter possesses slightly tuberous roots, long grass-like leaves, and seeds perfectly smooth, while the specimen examined in the chemical and micro-

scopical laboratories of the Philadelphia College of Pharmacy has lanceolate leaves from 2 to 3 inches long, roots that are not tuberous (*Fig. 2*), and deeply reticulate seeds. The specimen appears much to resemble *C. communis*. According to Thomas Morong (*Bulletin of Torrey Botanical Club*, December 1893), "*C. communis* may be distinguished from *C. nudiflora* by its open spathe, generally much broader leaves and more robust habit." He also says that the seeds are rugose and deeply pitted, instead of being reticu-

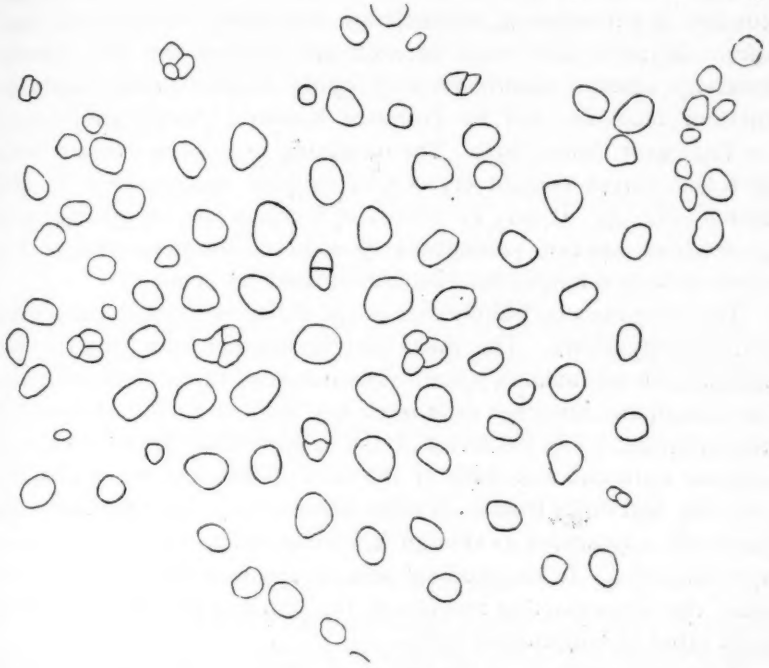

FIG. 9.

lated as in *C. nudiflora*. The specimen under examination appears to resemble *C. communis* rather closely.

The stem is procumbent or creeping in habit, and roots are being constantly produced at the nodes (*Fig. 2*). The leaves are broadly lanceolate, acute at the apex, contracted at the base into sheathing petioles. The floral leaves are large, heart-shaped, clasping bracts, enclosing a 2-4 flowered cymose inflorescence (*Fig. 1*). More time was devoted to a study of the inner morphology (anatomy) of the

the stem, leaf and bracts. The stem is more or less but irregularly cylindrical, somewhat flattened upon one side. It consists of the usual epidermis found in plants. The stomata, however, are raised. Under the epidermis occur 3-6 layers of collenchymatic cells which are but ¼ to ⅙ the size of the parenchyma cells underlying these layers. A well-defined cylinder sheath, composed of rather large and strongly suberized and lignified cells, extends around the fourteen fibro-vascular bundles. Between the latter are several layers of lignified cells. The remainder of the stem towards the center consists of parenchyma, in which are seventeen fibro-vascular bundles. Many of the large parenchyma cells of the pith contain mucilage which is readily detected by the iodine or methylene blue method recommended by Professor Kraemer (AMERICAN JOURNAL OF PHARMACY, June, 1898). The remaining parenchyma cells of both pith and cortex contain crystals of calcium oxalate (*Fig. 8*) and starch (*Fig. 9*). It may be worthy of mention that a movement of protoplasm was very perceptible in some of the parenchyma cells upon making a longitudinal section of the fresh stem.

The fibro-vascular bundles are of the collateral type characteristic of monocotyledons. The ducts vary in number from two to four, and are either annular or spiral. The nature of the cells of the cylinder sheath and mucilage cells were not studied to the extent that they warrant. The character of the substance on the external and internal walls and side walls of the cells of the cylinder sheath are peculiar, and differ from each other apparently. The mucilage has much the appearance as though it were in the nature of a cell-content mucilage. In longitudinal section the mucilage cells lie very near the fibro-vascular bundles of the pith and in juxtaposition to each other in longitudinal rows.

Transverse sections of the leaf show rather large epidermal cells. The walls of these epidermal cells are very thick. The stomata appear to be confined wholly to the lower surface. The guard cells, "Nebenzellen," and another row of cells are decidedly raised above the remaining epidermal cells. The respiratory cavity is rather large. The tissue between the upper and lower epidermis consists of palisade and loose parenchyma cells. The palisade cells are rather short and somewhat loosely arranged, and are made up of a single row of cells. The loose parenchyma cells are about three rows in number and the walls are much thinner than the palisade cells.

The tissues of the bract much resemble those of the leaf, save that the palisade cells are wanting and the epidermis has a tendency to become papillæ-like. The epidermal cells are much larger in size compared to the cells of the remainder of the leaf. The loose parenchyma consists of about three rows of cells. The stomata occur only upon the lower (dorsal) portion of the epidermis, as in the leaf. The "Nebenzellen" of the stomata are likewise four.

The structure of the whole plant is interesting from a botanical standpoint. The peculiarity of the marked contrast in the thickening of all the cells of the leaf, as well as the cylinder sheath, and the presence of mucilage, lead to the conclusion that this plant possesses an arrangement for carrying on the work of transpiration that is peculiarly its own.

DESCRIPTION OF FIGURES.

FIG. 1—Upper portion of stem with leaves and inflorescence in the axils.

FIG. 2.—Portion of creeping stem producing roots at the nodes.

FIG. 3.—Transverse section of stem, for description of which see text.

FIG. 4.—One of the fibro-vascular bundles just within the cylinder sheath.

FIG. 5.—Transverse section of stem showing a stoma.

FIG. 6.—Transverse section of leaf showing a stoma upon the under surface.

FIG. 7.—Transverse section of bract with a stoma upon the lower surface.

FIG. 8.—Various forms of crystals of calcium oxalate, found principally in the stem.

FIG. 9.—Starch-grains, mostly single, sometimes compound.

THE VOLATILITY OF SOME OF THE NEWER REMEDIES.[1]

BY FRANK X. MOERK, PH.G.

Two years ago, in making some experiments relative to the paper read at the meeting of this association, the writer noticed the formation of crystalline sublimates when *Exalgin*, *Acetanilid*, *Methacetin* and *Phenacetin* were heated in an air-bath to temperatures considerably below their melting points. At different times since then a more detailed study was undertaken, but had to be discontinued owing to pressure of other work; during the past month, however, considerable experimental work has been done on this subject, and the results are presented in this paper.

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[1] Read at the Meeting of the Pennsylvania Pharmaceutical Association, June, 1898.

Before giving these results I wish to state that consultation of a large number of standard chemical publications and treatises on the "Newer Remedies" failed to reveal a single record of these substances subliming below their melting points. In a paper on "Ammonol," read by Mr. G. M. Beringer, at the Pharmaceutical Meeting of the Philadelphia College of Pharmacy, February 17, 1897, and published in the March issue of the AMERICAN JOURNAL OF PHARMACY, 1897, p. 150, is found the following paragraph: "The filtered solution of 1 gramme ammonol in 30 c.c. of water, evaporated on the water-bath, yielded a residue of 0·222 gramme, and on prolonged heating, minute micaceous crystals separated and sublimed into loose tufts on the surface. These crystals proved to be acetanilid, showing that, as stated above, it had been partly extracted by the water, and that it was more or less volatile at the temperature of the water-bath." This is the only reference bearing on the subject that I was able to find.

My knowledge, two years ago, of the volatility of the previously mentioned substances may be summed up as follows:

Exalgin and acetanilid volatilize between 40° and 50° C.; methacetin and phenacetin volatilize at 100° C.

In the second attempt to finish the experiments, about a year ago, I noticed the sublimation of exalgin between 30° and 40° C.

These experiments were made by taking sections of glass tubing, ¼ inch in diameter and about 6 inches in length, closing them at one end and introducing sufficient of the remedies to make a column 1 inch long; after removing the adhering powder above the column and putting in a small plug of cotton so as to rest lightly upon the powder, the tubes were arranged in a cork, with a thermometer occupying the central position, so that the lower end of the tubes and the thermometer bulb were in the same plane, and the powders in the tubes wholly immersed in a tin-can, which constituted an improvised air-bath. The heat was so regulated that the maximum and minimum temperatures did not differ by more than 10° C. during the experiment; thus, in heating to 30°–40° C., the object was an exposure to 35° C., although change in pressure of the gas-supply might cause variation of several degrees either way. The heat was maintained for two days and then increased 10° C.; the tubes were frequently examined during this time for the appearance of sublimates; the first proof of a sublimate was ob-

tained by examining the tubes in strong daylight or by artificial light and noting the refraction of light caused by the minute crystals. Exalgin, at 30°–40° C., showed a sublimate after twenty-four hours' heating, and at 40°–50° C. in from nine to twelve hours' heating. Acetanilid, at 30°–40° C., showed no signs of a sublimate after forty-eight hours, and at 40°–50° C. but a faint sublimate after forty-eight hours. Methacetin and phenacetin yielded no sublimate until heated for some time to 90°–100° C. Lactophenin, under the same conditions, gave no positive evidence of volatility.

Prolonged heating was necessary in these experiments, owing to the relatively small surface exposed; the recent experiments were made by heating the substances placed in watch-crystals in a water-oven, the opening in which for the escape of volatile products was closed by a cork carrying a glass tube about 6 inches long and ½ inch in diameter, through which the thermometer was introduced; this tube enabled the detection of sublimates. One-half gramme each of exalgin, acetanilid, methacetin, phenacetin and lactophenin were placed in weighed watch-crystals 2½ inches in diameter, and heated in the water-oven for the specified time; the temperatures represent respectively initial and final readings for the experiment when two are stated; after cooling in a dessicator and weighing, the weight of the watch-crystal was subtracted, giving the weight of the powder at the end of each experiment; the differenc between two successive weighings will give the loss sustained in heating for the stated period and at the stated temperatures. It will be noticed that in some cases there is an increase in weight; this is probably due to absorption of some of the more volatile substance by the less volatile; a slight difference may also be caused by allowing more or less time to elapsé between the placing of the watch-crystals with contents in the dessicators and the weighing.

The results are tabulated in the order in which the experiments were made; in the last four only a single substance was heated so as to recognize the formation of sublimates; the loss of a half-milligramme gave abundant evidence as a sublimate. From the table it will be seen that exalgin, acetanilid, methacetin and phenacetin are volatile in the order given, which corresponds also to the order of their melting point; the decided difference between these four and lactophenin is no doubt chiefly due to the fact that the first four contain the acetyl group, while lactophenin contains the lactyl group.

Melting Point. Temperature and Length of Time of Heating.	Exalgin, 100° C.	Acetanilid, 113°–114° C.	Methacetin, 127° C.	Phenacetin, 135° C.	Lactophenin, 116°–117° C.[1]
48°– 55° C., 3 hrs.	0·4930	0·4980	0·5000	0·4995	0·4990
55°– 46° C., 7 "	0·4825	0·4995	0·5010	0·5005	0·5005
48°– 46° C., 10 "	0·4735	0·4985	0·5010	0·5000	0·4995
62°– 68° C., 7 "	0·4235	0·4965	0.5000	0·5000	0·4995
66°– 85° C., 5 "	0·2830	0·4890	0·5000	0·5000	0·5005
80°– 85° C., 4 "	0·1890	0·4795	0·4995	0·4990	0·5000
90° C., 4 "	discontinued	0·4685	0·4980	0·4980	0·4990
85° C., 2 "	—	0·4635	0·4985	0·4985	0·4995
90°– 92° C., 3 "	—	0·4490	0·4970	0·4960	0·4985
95°– 97° C., 5 "	—	0·4315	0·4955	0·4955	0·4990
85°– 90° C., 2 "	—	0·4275	0.4955	0·4955	0·4990
98°–100° C., 4 "	—	discontinued	0·4930	0·4935	0·4985
98°–100° C., 6 "	—	—	0·4915	0·4930	0·4980
98°–100° C., 9 "	—	—	0·4885	0·4910	0·4985
98°–100° C., 5 "	—	—	0·4870	0·4895	0·4975
98°–100° C., 6 "	—	—	0·4850	—	—
98°–100° C., 5 "	—	—	discontinued	0·4880	—
98°–100° C., 7 "	—	—	—	discontinued	0·4970
98°–100° C., 6 "	—	—	—	—	0·4960

[1] No record of the melting point was found; the above determination was made without corrections.

The importance of these observations is chiefly in connection with the solubilities and quantitative estimations of these substances. The favored, because expeditious, method of ascertaining the solubility of a substance is to make a saturated solution at the proper temperature and evaporate a weighed portion of the solution to dryness on a water-bath and *complete* the drying at a temperature of

100° C. or even higher in an air-bath. The higher this temperature and the more prolonged the heating, the smaller will be the quantity of the recovered substance and, hence, a decreased solubility is the result. To illustrate: the solubility of phenacetin is stated by different authorities to be one part phenacetin in 1,400, in 1,500, in 1,850 and in 2,000 parts of water, the temperature of which ranges from cold (?) to 20° C.; these discordant statements are in all probability due to the volatility of the phenacetin.

In the quantitative estimations, drying, after treatment with suitable solvents, is a necessary operation and, hence, the same results are to be looked for. While my experiments did not include higher temperatures than 100° C., the behavior of exalgin and acetanilid will be duplicated, without doubt, at somewhat higher temperatures by the less volatile methacetin, phenacetin and lactophenin.

The difference in the behavior of acetanilid and of methacetin, phenacetin and lactophenin at temperatures below 85° C. suggested the possibility of detecting acetanilid in these other remedies. For this purpose I selected phenacetin as the substance which has the reputation of being adulterated at times with acetanilid; whereas methacetin and lactophenin, according to a criticism of my paper of two years ago, have not been known to be so adulterated, and, inferentially, my time wasted, in providing for such a contingency; 0·025 gramme acetanilid was weighed in a watch-crystal, covered with 0·475 gramme phenacetin (making a 5 per cent. adulteration) and heated in a water-oven to a temperature ranging from 80° to 85° C.; in less than one hour a distinct sublimate had formed, and after three hours' heating a loss of 0·0055 gramme was noted.

In a second experiment 0·005 gramme acetanilid and 0·495 gramme phenacetin *were mixed* (making a 1 per cent. adulteration) and heated to 72–82° C.; a distinct sublimate was seen after half an hour, and after three hours a loss of 0·0045 gramme was noted; the heating continued at 70–80° C. for six hours gave an additional loss of 0·0015 gramme. The sublimate in this case was dissolved in 2–3 c.c. warm water, and with this solution distinct reactions for acetanilid by the bromine-water and the iso-nitrile test were obtained; the solution failed to respond to the tests for phenacetin, indicating its absence in the sublimate, or, if present, in a very much changed ratio from the mixture used in the test.

This sublimate test will, no doubt, be applicable to methacetin

and lactophenin as well as to phenacetin, and has the great advantage over all other tests proposed for such adulterations, that it enables, at least, the partial recovery of the adulterant.

Careful experiments made with other synthetical remedies may result in notably increasing this list of volatile substances.

LABORATORY NOTES.

By Chas. H. La Wall and Robt. C. Pursel.

OIL OF SASSAFRAS.

The large quantity of this oil which is required by soap manufacturers and the liability of its adulteration make this substance of frequent occurrence in the analytical departments.

As the boiling-point covers a considerable range of temperature, the specific gravity, general appearance and odor are all taken into consideration in deciding upon the quality of a sample offered for examination.

Safrol, which at one time was used as an adulterant, is now higher in price than the oil.

It normally constitutes about nine-tenths of the weight of the oil according to the U. S. Dispensatory, and has a specific gravity of 1·108, while the specific gravity of oil of sassafras varies between the limits of 1·07 and 1·09.

Oil which is lighter than 1·07 is looked upon with suspicion by the consumer, as it might indicate adulteration with the fractionated camphor oil, which is used for the purpose.

Some of the consumers also dislike the crystals of safrol which almost invariably separate out of oil of sassafras in cold weather, so it is very hard to suit them, the idea being that oil of a certain intermediate specific gravity is of greater perfuming power than either pure safrol or very light oil.

The distiller of the oil has very little scientific knowledge, his work being done empirically. The oil is usually received in five-gallon cans from the distiller; occasionally a consignment is noticed which has some cans of low specific gravity and others high. This is not necessarily attributable to adulteration, as it often comes from a distiller of good reputation. It is probably due to having the oil stored during cold weather, the safrol separating and settling to the bottom. When redissolved by warming, it does not

mix unless thoroughly agitated, and upon drawing it off without proper care in this respect a variable lot of oil will result.

One experience, however, illustrates how necessary it is to know all the facts pertaining to the subject before arriving at a conclusion.

Almost two years ago, one of the writers examined a lot of five cans of oil of sassafras which had been received from a distiller in Maryland. It was found to be low in specific gravity (about 1·055), and was so reported.

The distiller wrote that it probably had congealed and needed thawing out.

Another examination was made after inserting a stick and thoroughly stirring the contents, to make certain of the absence of any crystals in the bottom. The gravity was practically the same, and the distiller was notified that the oil had been rejected.

He arrived the next day, very much excited, bringing his hydrometer along. Upon being shown the oil he asked for a five-gallon bucket, and, after pouring out about two and one-half gallons, shook the remainder up vigorously in the can, and we took the specific gravity; it was over 1·08, and, when thoroughly mixed, the entire lot was just 1·07, as claimed. It was stated by the distiller at the time, and has been verified by the experience of the writers, that the separation into layers after the oil has crystallized and been thawed out is so marked that the only way to insure a homogeneous product is to pour part of it out before agitating, which agitation must even then be very vigorous.

The distiller also made the statements that congealation was not necessary to produce such a separation, and that pure oil would always separate into three layers of different densities after standing for some length of time.

This was somewhat doubted, but the following experiment was undertaken to decide the matter. A glass-stoppered cylinder, about 30 inches high and 4 inches in diameter, was filled with the oil obtained from the person making the above statement.

It was allowed to stand exactly one year without being disturbed, and the specific gravities were taken of samples siphoned from the top, middle and bottom, with the following results:

Top, Sp. Gr.	1·06864 at 15° C.
Middle, "	1·06964 at 15° C.
Bottom, "	1·06984 at 15° C.

The slight difference, observed after the length of time the sample had been allowed to stand, indicates that the distiller was somewhat mistaken in his facts. The experience gained by his visit was afterward applied practically in the case of a customer who rejected a lot of forty-five cans as low in specific gravity.

A visit was made to the establishment of the buyer and a practical demonstration was afforded his chemist, as follows: A can which had not as yet been tested by them was opened and the specific gravity taken of the first that was poured out, which was about 1·060. When about half of the entire contents had been poured out, crystals of safrol began to appear. The remaining oil in the can was warmed to dissolve the safrol, and upon taking the specific gravity at 15° C., it was found to be about 1·080.

The matter was, therefore, supposed to be settled, but a few days later another complaint was received from the same party, to the effect that upon mixing the whole lot of forty-five cans the gravity was still only 1·06.

A second visit developed the fact that the specific gravity had been taken at the temperature of the room (about 28° C.) and not at 15° C., which is the authorized temperature. A few moments sufficed to chill a sufficient quantity of the oil to 15° C., which showed the specific gravity to be about 1·071.

No further complaints were made.

The following shows the maximum, minimum and mean specific gravity of all samples examined during 1896, 1897 and 1898, up to June 1st:

	Maximum.	Minimum.	Mean.
1896	1·0840	1·0500	1·0654
1897	1·0850	1·0610	1·0736
1898	1·0830	1·0450	1·0713

This represents an aggregate of about 10,000 pounds of the oil as it comes from the distiller.

The color varies from deep yellow to nearly colorless, and there is a difference noticeable in the odor of different lots.

The artificial oil is obtainable in the market, and very closely resembles the natural, so that it is practically impossible to definitely state whether an oil is pure or not; however, there is a very great quantity of oil sold which is not tampered with after leaving the distiller. The guarantee of its purity rests with him.

MILK SUGAR.

One of the tests for the purity of milk sugar, according to the U.S.P., 1890, requires that no brownish or blackish color shall develop within thirty minutes when the milk sugar is sprinkled over the surface of sulphuric acid.

Occasionally a sample is found which does not test as good in this respect and yet polarizes equally as well as a sample which does not show any coloration. Some crystallized milk sugar was obtained and the suggestion offered itself that the presence of thread or string upon which the crystals are allowed to form (as in the case of rock candy) might be responsible for some coloration.

Investigation showed this to be the case; clean crystals from the outer side of the string gave no coloration after being powdered and tested according to the U.S.P. directions, while, in the case of the section across the entire string, the coloration was directly proportional to the thickness of the crystalline mass, or, in other words, to the quantity of thread which had been powdered up with the milk sugar.

Polarization is the safest test, as it can be seen that a good milk sugar might be unjustly rejected under the above conditions.

Perhaps manufacturers of this article might substitute some fiber less carbonizable than that now used, if attention were called to it.

301 CHERRY STREET.

ASSAY OF VALLET'S MASS.

BY HENRY K. THOMPSON, P.C.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy. No. 177.

The usefulness of the official formula for Vallet's mass depends upon the formation and preservation of ferrous carbonate, which is insoluble in water, and free from irritating and styptic properties.

The author has made some experiments with the view to devising a method by which the pharmacist can conveniently and with fair accuracy ascertain the amount of ferrous carbonate which Vallet's mass, of his own or other manufacture, may contain.

After several unsuccessful attempts to find shorter processes, the following method of assay was considered satisfactory for the pur-

pose: 1·1573 grammes of the sample were treated with distilled water, the insoluble matter collected on a plain filter and washed with distilled water until honey, sugar, other soluble organic and inorganic substances were removed. The filter and its contents were then transferred to a beaker, mixed with distilled water, and the mixture treated with diluted sulphuric acid until it acquired a distinct acid reaction and effervescence ceased. The contents of the beaker were then poured on another plain filter, and the pulp of the first filter washed on the same with distilled water until the washings failed to react with potassium ferricyanide test solution. The mixed filtrate and washings were then titrated with decinormal potassium permanganate volumetric solution until a permanent pink tint was imparted to the liquid. When 1·1573 grammes of the sample are taken, each cubic centimeter of the solution represents 1 per cent. of ferrous carbonate.

A sample of Vallet's mass made in strict accordance with every detail of the Pharmacopœia was assayed by the foregoing method, for the purpose of learning how much ferrous carbonate the fresh product prepared in this manner should be expected to contain. Every care was taken to lessen the chances of oxidation, which invariably takes place to a greater or less extent. The finished product was looked upon as a fair sample of the preparation. It contained, on an average, 38·66 per cent. of ferrous carbonate. The duplicate analyses of it showed 38·79 and 38·54 per cent. respectively.

There is not sufficient sodium carbonate in the official formula to completely change all of the ferrous sulphate directed therein to carbonate, but by using perfectly pure crystallized sodium carbonate (the U.S.P. directs it to be at least 98·9 per cent. pure), and assuming that it is totally consumed in forming ferrous carbonate; also, that all of the latter is precipitated, and that none is lost mechanically or oxidized in manipulation, the official product should contain 40·54 per cent. of ferrous carbonate. But, as is well known, it is quite impossible to fulfill all of these conditions, and it is probable, therefore, that a sample showing 38·66 per cent. of ferrous carbonate is a fairly good product of the process when carried out on a small scale.

For the double purpose of more thoroughly testing the suggested method of assay and of gaining some knowledge of the quality of the preparations on the market, specimens were procured, from four

manufacturing pharmacists and chemists located in Philadelphia, and subjected to the treatment already outlined. The result of duplicate analyses, in percentages of ferrous carbonate, were as follows:

	I	II	III	IV
	29·03	37·84	49·22	33·12
	28·78	37·62	49·14	33·04
Average	28·90	37·73	49·18	33·08

JAVA QUININE.

By J. B. Nagelvoort.

It will, no doubt, be of interest to the readers of the American Journal of Pharmacy to know that Java quinine, as a market article, is an established fact. The writer, among others, secured some of this first Dutch product for assay. After the many misrepresentations of the ability of the Java factory, it is a duty to report this final success. The prices of Peruvian bark are already on the increase; neglected plantations, lately offered for sale for 1 cent on the dollar, are taken under cultivation again; and if the colonial government will lighten the difficulties, by giving freedom of duty on the raw material, on the chemicals, the sulphuric acid and the caustic soda, needed for the manufacturing of this valuable medicine, this chemical industry will yet become a blessing for the whole island. Twenty-one boxes quinine sulphate were sold at Amsterdam, at the April sale, wholesale, at a minimum of 14·20 f. and a maximum of 15·30 f.; retail, 1 f. per kilogramme, including cans (a Dutch f. equals 40 American cents).

Assay.—One gramme of the sample is deprived of most of its water of crystallization and the possible double salts of the cinchona alkaloids broken up, by warming in the air-bath to 100° C. for half an hour. It is then transferred into a suitable small "Erlenmeyer"; 10 c.c. of water is added to it; the flask is provided with a good cork, and now immersed in water that was warmed to 60° C. The flask, with its contents, is kept in this water, the temperature being constant, for half an hour, shaking frequently. It is then taken out and afterwards again immersed for two hours more in water of a temperature of 15° C., agitating the contents of the flask, as before, from time to time. After this rigid test on the presence of easier soluble secondary cinchona alkaloids, cinchonidin and cinchonin

especially, the fluid is filtered in a small funnel of 2 inches diameter, a filter paper being used, and by rapid filtering little is absorbed. A folded filter, to increase the speed of filtering, is not necessary, sufficient fluid running through for the continuation of the test by tapping the funnel. I never use 2 grammes of the salt under examination and 20 c.c. of water, as I do not require this amount of fluid.

Test-tubes of a little over 10 c.c. capacity on foot, and divided into ½ c.c., are kept for the purpose of examining quinine sulphate by Vierner's process. One of the test-tubes is taken and 5 c.c. of the aqueous mixture is filtered into it; 4·5 c.c. ammonia of 0·96 added and cooled to 15° C., this amount of ammonia being all that was needed to obtain a very nearly clear fluid, as the result of the mixing of the two liquids.

The few cheesy-like flocks, which remained suspended in the fluid, a peculiarity of this test, dissolved entirely after the addition of another 0·5 c.c. of the same ammonia.

I have been very particular in describing the above details, because this Java quinine sulphate is hereby proven to be an article of unusual excellence and much purer than what the pharmacists in the United States are getting. In its fresh state it was found to contain 14 per cent. water of crystallization.

A COLORING MATTER FOUND IN SOME BORRAGINACEÆ.[1]

By J. B. S. Norton.

Some time last summer Mr. J. G. Smith, of the Division of Agrostology, sent a small specimen from Grant County, New Mexico, to the Missouri Botanical Garden for identification, which I decided to be *Plagiobothrys Arizonicus*, Greene. Mr. Metcalfe, who collected the plant, says that "when the sheep find a patch of it, it colors their heads red clear to their ears." The herbage of the dried plant had stained the letter which enclosed it a violet purple, something like wine stains. Mr. A. M. Ferguson tells me that a plant of Western Texas, doubtless also some species of Borraginaceæ, is known to affect sheep in a similar manner. The New Mexican plant is known there as blood purslane, says Mr. Smith, in a recent letter, and is fine for sheep pasture in the spring.

[1] Ninth Annual Report of Missouri Botanical Garden, 1898, p. 149.

These facts prompted me to further investigate the matter. I examined the other specimens of the same species, and others of that genus and related genera in the Garden herbarium, and found that a number of specimens had stained the paper in the same way, some through as many as five herbarium sheets. The color spreads through the paper from the mounted plant, though in what manner I have not been able to ascertain.

It is well known that a coloring matter is common in the roots of several species of Borraginaceæ, and the substance is probably the same in all. It is known as alkannin, and is a non-nitrogenous, resinous, purple coloring matter, soluble in oils, alcohol and ether, but not soluble in water.[1]

Alkannin, or alkanet (or alcanet), as the dye is called, is obtained from the root bark of Alkanna tinctoria, which is cultivated in South and Central Europe, for the dye which is used in pharmacy for coloring salves, and for coloring wine and other liquids sold as wine. Alkanet is also an excellent test for resins and oils, to which it gives a red color, and is used in micro-chemistry as a reagent for these substances. The dye is said to give a brilliant violet color, with iron and alum mordants, to linen, cotton and silk, but not to wool. The fact that the wool, on sheep grazing among growing plants, is colored is probably due to the alkannin being dissolved in the oil of the wool. In the Old World alkannin occurs also in quantity of commercial value in Arnebia, Echium, Symphytum, Onosma and Lithospermum.[2]

In a brief examination I have found but a few references to this color in American Borraginaceæ. The color in the roots of species of Lithospermum (the puccoon of the Indians) is well known; and Dr. Gray, in the Synoptical Flora, mentioned one species of Plagiobothrys (P. Torreyi), the herbage of which "gives an abundant violet stain to paper." It is opposed in this character to P. ursinus of similar habit, but "imparting no violet stain to paper." P. tinctorius (Ruiz & Pavon), Gray, *Proc. Am. Acad.*, **20**, 283, of South America, is also described as "papyros violaceo colore tingens."

An examination of the herbarium material of the Garden shows

[1] The information regarding the properties and uses of alkannin is taken from Tschirch, Angewandte Pflanzenanatomie, The United States Dispensatory and The Century Dictionary.

[2] Engler & Prantl, "Pflanzen familien," 4^{3a}; 73, 113, 124, 127.

that the coloring matter is abundant enough to stain the herbarium paper in the following species, chiefly in the roots; Echium vulgare, Eritrichium glomeratum, Krynitzkia barbigera (abundant in leaves), K. Californica (slight), K. maritima, K. micrantha, K. pterocarya, Lithospermum multiflorum, L. strictum, L. spathulatum, L. hirtum, L. canescens, L. augustifolium (not abundant), Plagiobothrys canescens (in leaves), P. nothofulvus (in leaves), P. tenellus, P. Arizonicus (abundant in stem and leaves as well as root), P. Torreyi (very abundant in some specimens, others with hardly a trace).

The coloring matter in the American plants seems to be the same as that derived from Alkanna tinctoria. Though I know of no analysis of any of the American Borraginaceæ, Professor Pammel and myself have obtained the characteristic reactions from the leaves and roots of Plagiobothrys with resin and oils. The color is also very persistent on the hands, after handling the plants. Perhaps some economical use may be made of our American plants.

GLEANINGS FROM THE MEDICAL JOURNALS.

By Clement B. Lowe, M.D.

YELLOW SNOW AND WIND CARRYING POWER.

There was a fall of dirty-colored snow at Engaddi, in Switzerland, not long ago, and instead of taking it as an evil omen, as of yore, the inhabitants proceeded to investigate it. Boiling the snow gave a dirty yellowish water, from which a thick layer of mud-like consistency and appearance was deposited. Testing of this with various chemical re-agents showed that it contained iron in combination with minute quantities of other metals and chemicals, such as are found only in certain minerals rich in iron ore in Hungary. The dust had evidently been lifted by an eddy of wind from the bare plains hundreds of miles away, and carried until it met the falling snowstorm, on which it was deposited to fall with it. The incident is a striking illustration of the possible carrying power of the wind in times of epidemics, the well-known tendency of bacteria to cling to dust particles favoring their transportation in this way. An explanation of the almost simultaneous breaking out of epidemics at points distantly separated may thus be afforded—a much more definite explanation than the usual appeal to indefinite meteorological conditions.—*Phila. Med. Jour.*, April 16, 1898.

A NEW METHOD OF VACCINATION.

Dr. M. Hutchins, in *The Jour. of the Amer. Med Assoc.*, writes in an interesting manner on "Denudation *vs.* Scarification." His plan of procedure is as follows: The point to be vaccinated is cleansed. A piece of cotton as large as the desired denudation is wet with liquor potassæ and laid on, or a little of the fluid is put on with the bottle stopper. After two or three minutes, or as soon as slight burning is felt—it usually does not burn at all—the cotton is removed, if it was used—the soap mixture which has formed with the skin secretions is wiped off with a piece of wet cotton, though this is not essential to success, in order to render the next step easier. Then an ink eraser, a toothpick of soft wood, a pencil rubber, a piece of gauze (the quickest) or a piece of damp cotton is used to rub away the softened epidermis. The friction is slight, the pain is only a little stinging when the sensory nerve filaments become exposed. We obtain in a few seconds a moist, shining surface, often a clear view of the papillary vessels, but no bleeding. The vaccine is now applied and let dry on in the usual way.

The advantages of this method are its practical painlessness and the absence of terrifying instruments. Further, bleeding is a bar to successful vaccination. By scarification it is difficult to stop short of bleeding, while with denudation bleeding is almost impossible. There is also less danger from an undesired infection from instruments or epidermis when this method is employed. As to the results: A good lymph will "take," an unreliable will not. Inoculation was successful in as many cases vaccinated by denudation as by scarification, and increased experience will probably show a much larger percentage of success.

ANTIPYRINE IN SCIATICA.

If injections of antipyrine do not always relieve sciatica, it is because they are not made deep enough, so as to bring the analgesic actually into contact with the nerve-trunk.—KUHN, in *Sem. Med.*, March 10.

FOR VOMITING OF UTERINE ORIGIN.

℞.	Menthol,	5 grains.
	Elixir of pepsin,	1 fluidounce.
	Tincture of opium,	2½ fluidrams.

Dose: Ten to twenty drops, to be taken before meals.—*Lutaud.*

TÆNIAFUGE.

℞.	Salicylic acid,	7 grains.
	Ethereal extract of male fern,	9 grains.
	Oil of cinnamon,	10 drops.
	Gum arabic,	2 drams.
	Simple syrup,	1½ fluidounces.
	Distilled water,	3 fluidounces.

To be taken fasting, in the morning, in two parts, with an hour's interval.—*Phil. Med. Jour.*, April 9, 1898.

ENGLISH IN PRESCRIPTION-WRITING.

We think it time that Latin should not be used any longer in writing prescriptions. There is not one in a hundred physicians who can write Latin correctly, and a prescription that is one-half or one-fourth in Latin and the rest in English is bastardly ridiculous. We all hide our philologic ignorance under contractions that lead to ambiguity and even danger, and, when we can no longer hold out with our wretched sham, we are compelled to plunge into English for the directions. All arguments for this mediæval nonsense do not amount to a pinch of snuff. As for hiding the knowledge of the drug from the patient, and the advantage of patients travelling abroad, the facts need only to be looked squarely in the face, and the argument for Latin becomes a bad boomerang. The practice is a pompous bit of humbug, which should be left to mediævalists and not scientists. So soon as we get our therapeutics out into the daylight of common sense and genuine science, we shall surely dispense with the sorry jumble of bad Latin and poor English, illustrated by nine-tenths of the actual prescriptions on file to-day at the drug stores.—*Philad. Med. Jour.*, April 19, 1898.

RECENT LITERATURE RELATING TO PHARMACY.

ASSAY OF BELLADONNA LEAVES.

W. A. Puckner (*Pharm. Rev.*, 1898, p. 180) proposes the following modification of C. C. Keller's Method (*Schweiz. Wochenschr. f. Chem. u. Pharm.*, 1894; AMERICAN JOURNAL OF PHARMACY, 1894, p. 42) for the assay of those alkaloidal drugs where it is necessary to use relatively large quantities of material, as, for instance, with belladonna, henbane, etc-

To 10 grammes of drug, dried and powdered, as by Keller's method, contained in a flask of 75–100 c.c. capacity, add 50 c.c. of

the light chloroform-ether mixture used in Keller's method and 5 c.c. of ammonia water (10 per cent.), cork well and shake at frequent intervals for one hour. The mixture is now transferred to a small percolator, improvised by drawing out a test tube of about 50 c.c. capacity (a rather narrow one, diameter about 20 millimeters being preferred) provided with a plug of cotton at the outlet, and the percolate received in a separator. When all has passed, another 25 c.c. of light chloroform-ether are passed into the flask, and with it the remainder of the drug transferred to the percolator, and, when this has passed through, another 25 c.c. are used in the same manner. The ethereal solution in the separator containing the alkaloids from 10 grammes of drug is now treated as outlined in Keller's method, and the assay completed in exactly the same way.

ACETIC ACID AS A MENSTRUUM.

According to E. H. Squibb (*Ephemeris*, 1898, p. 1938), acetic acid has been more extensively used in the past year in the way of applying it to the exhaustion of crude drugs containing active principles. The drugs have been so completely exhausted as to put beyond all doubt the value of this acid as a solvent. It is found that this acid is so effective that a thoroughly representative extract can be obtained which contains such a slight excess of acetic acid that it may be practically disregarded. Even this excess could be gotten rid of by heat if its presence were considered detrimental, but when the dose of the extract in question is considered, the amount of acid present is inappreciable. Moreover, such an acetous extract is found to be permanent, showing no signs of deterioration after a lapse of six or eight months. In the case of drugs containing oleoresins even, the exhaustion by this acid has also proved to be quite complete, which proves that its solvent properties may be regarded as fully efficient for all classes of crude drugs—thus substituting it quite completely for alcohol as a solvent in the preparation of both fluid and solid extracts. The ready miscibility of these acetous extracts with water without precipitation, together with the strength and uniformity that can be obtained by the use of this solvent, offsets the objection that may be raised against the small excess of acetic acid in the finished extract, while the greatly decreased cost warrants the use

of such extracts even though there were most extreme disadvantages against them. Another very important advantage of these acetous extracts is that their active principles are evidently combined with the acetic acid to form salts which are no longer incompatible with many of the prominent medicaments now found in prescriptions. This latter is such an important advantage that it outweighs many minor disadvantages.

TOXALBUMOSES IN CROTON SEED.

In an extended study on the toxalbumoses which coagulate blood, M. Elfstrand gives a brief account of previous investigations on croton seed and its poisonous properties, and also on abrin and ricin. The poisonous albumen of croton seed was extracted with water and a salt solution, after previously removing the fat, etc. with alcohol and ether. The greater portion of the book is devoted to a report of experiments on the effect of croton seed extract on the blood and blood constituents.—"Ueber giftige Eiweisse welche Blut körperchen verkleben." Upsala: Almgvist & Wiksells Boktrycheri-aktiebolag, 1897, pp. 182; from *Expt. Sta. Record.*

DETERMINATION OF NITRIC ACID IN DRINKING WATER.

Devarda employs the following method: Evaporate one-half to two liters of the water to be examined to about 300 c.c., add two grammes of pulverized aluminum bronze (containing 59 per cent. of aluminum, 39 per cent. of copper, and 2 per cent. of zinc), and 20 c.c. of potash solution (containing 30 per cent. KOH) free from nitrate. Let stand one-half hour and distill off ammonia into acid with gentle heat.—*Zeitschr. Allg. Osterr. Apoth. Ver.*, 1897, p. 257.

A NEW MILK PRESERVATIVE.

The "Rhodian purifier," which it was claimed would keep milk sweet for several days, in the warmest weather, was found by A. W. Stokes (*Analyst*, 1897, p. 320), to consist of potassium nitrate and water, there being 19 per cent. of the nitrate. It had no merits as a preservative. Its presence in milk is detected when the milk solids are incinerated by deflagration, and the ash if taken up in dilute sulphate gives the nitrate reactions. In testing milk by the Gerber, Leffman-Beam, or Babcock processes a yellow color appears when the milk containing this preservative is mixed with strong sulphuric acid, and minute bubbles of nitrous gas are given off.

A NEW MILK ADULTERANT.

A "secret nostrum for concealing the addition of water to milk" was found by A. W. Stokes (*Analyst*, 1897, p. 321) to contain 1·96 per cent. of dextrin. It was claimed that 20 per cent. of water could be added to milk without fear of detection, provided four ounces of the material was added per pint of milk. It was said to be used extensively in Australia. It could be detected by the small amount of unaltered starch it contained, which gave the iodine reaction.

ADULTERATION OF ANISE.

In addition to the fact that commercial anise contains sometimes conium, as stated recently (in *Pharm. Centralh.*, 1897, p. 308) Volkart (*Schweiz. Wochenschr. f. Chem. u. Pharm.*) adds the fact that such adulterated anise contains also a considerable amount of the bluish-green fruits of *Setaria glauca*, Beauv. (Paniceæ) and commonly also the fruits of Indian grass or hairy rush (*Echinochloa crus galli*, Beauv.)—*Pharm. Centralh.*, 1898, p. 297.

SAFFLOWER.

Under the name of Safflower, the *Ber. d. D. Pharm. Gesellsch.*, 1898, 27, is authority for the statement that some thousands of kilogrammes of ray flowers of Calendula are shipped from China to America, and that they are not used as a dye-stuff, but employed in medicine.—*Pharm. Centralh.*, 1898, p. 297.

NUTMEGS.

The prevailing opinion is that nutmegs are limed for the purpose of destroying the germinating qualities of the seeds. Tschirch now says (*Schweiz. Wochenschr. f. Chem. u. Pharm.*, 1898, p. 21) that the object of liming is solely to protect the seeds against the attack of insects, as the germinating vitality, even without this treatment, is soon lost.—*Pharm. Centralh*, 1898, p. 297.

OLEUM MYRISTICÆ.

Expressed oil of nutmeg is not expressed in the Molucca Islands from the broken and much deteriorated nutmegs, but the operation is now carried on in Europe by the employment of machines. In Holland it is obtained by the use of pressure, whereas in Germany it is extracted. In both cases, however, it is liable to adulteration with animal and vegetable fixed oils. The pressed cake from which

the expressed oil is obtained still contains from 8 to 10 per cent. of an ethereal oil, which is employed as a substitute for the much dearer (nine times) oil of mace from which, according to Roller, it is hardly distinguishable.—KRASSER, in *Zeitschr. d. Oesterr. Apothekervereins*, 1897, 825; abs. in *Pharm. Centralh.*, 1898, p. 297.

EDITORIAL.

WAR REVENUE BILL.

It is long ago that Alexander Hamilton, the great financier of the young American Republic, wrote "that a complete power to procure a regular and adequate source of revenue, as far as the resources of the community will permit, may be regarded as an indispensable ingredient in every constitution." One of the first acts by the first Congress in 1789 was the Tariff Act of that year. In this act were contained duties for revenue and duties intended to give protection to American industries. Since that time the tariff has been a matter at issue between the two great political parties, and was only superseded by the slavery question between 1842 and 1860. During all these years duties have been raised from time to time, for the purpose of providing an increase of revenue as well as for improving the defences of the country. Thus the Act of 1792 raised duties to provide means for increasing the army after St. Clair's defeat in the Indian war. The Act of 1797 was needed to provide for the payment of certain installments of the foreign debt then coming due. In 1800 duties were increased to pay interest on a loan authorized in view of a possible war with France. In 1804 an addition of 2½ per cent. on all duties yielding the "Mediterranean Fund" for carrying on the war with the Barbary Powers was made. In 1812 all duties were doubled for the purpose of carrying on the war of that year. In 1861 the Morrill Tariff was introduced. This was one of a series of "war measures" occasioned by the Civil War, in every year of which several acts for increasing duties were passed, the most important of which were the general tariff acts of 1862 and 1864.

The war with Spain, contrary to Spanish opinion, has cemented the nation as nothing but war apparently could do. It was generally realized from the start that the war would necessitate an increase of revenue for the Government, and that the American people, as a whole, must contribute toward this end. In April a war revenue bill was introduced by the Ways and Means Committee of the House. As was to be expected, it needed considerable alteration, and we find numerous changes in the bill as finally adopted by the House and Senate, and signed by the President on June 13th. There has been a notable compromise in the coinage of seniorage and in the issue of bonds. There were minor compromises on other subjects in dispute, such as the size of package of smoking and chewing tobacco. The change in the measure which is most satisfactory to the drug trade, as constituting that part of the community most vitally affected, is the reduction of the rate of tax on medicinal and proprietary articles from 4 cents on the dollar of retail price to 2½ cents. Mr. Dingley, in explaining the Conference Report on the War Revenue Bill (*Cong. Rec.*, p. 6,426) said, relating to that portion which affects the apothecary:

"The Senate modified the House proposition relating to the tax on proprietary medicines, and in modifying it introduced new elements which placed the whole subject within the jurisdiction of the conferees. The result has been that after a careful investigation the conferees have accepted the general scope of the proposition contained in the Senate amendment confining the tax to proprietary medicines, and the conferees of both Houses have concurred in reducing the tax on proprietary medicines and perfumes, etc., about one-third. Both the Senate and the House conferees were satisfied from all the investigations that have been made, that although the tax was precisely the same in the House Bill as in the Revenue Acts from 1864 to 1872, yet that under existing conditions it was too large, and therefore it has been reduced about one-third all along the line.

"The Senate amended the proposition for taxing stocks of medicinal preparations on hand, so that they should be stamped only as sold by the retailer, on the ground that there is a large part of the old stocks of druggists throughout the country that is unsalable, and that a stamp tax imposed upon all of that stock would be unjust and unfair. The House conferees readily concurred in that view of the case and accepted the Senate proposition, which imposes a stamp tax upon stocks of proprietary medicines only as the articles are sold by the retailer. So that in that case the tax is only paid by the retailer as he may sell the stock; and if any of it is unsalable, no tax is required upon it.

"The Senate amendment imposing a stamp tax on all articles sold under a trade-mark or patent, or special proprietary name, was strenuously objected to by the House conferees, and went out."

As indicating the important features for the apothecary to bear in mind, the following succinct account, issued by Smith, Kline & French Company, may be of value:

Schedule B.

A.—Medicinal Proprietary Articles and Preparations.

B.—Cosmetics and other similar articles.

Proprietary Medicines.—SEC. 20. That on and after the first day of July, eighteen hundred and ninety-eight, any person, firm, company or corporation that shall make, prepare, and sell, or remove for consumption or sale, drugs, medicines, preparations, compositions, articles, or things, including perfumery and cosmetics, upon which a tax is imposed by this Act, as provided for in Schedule B, without affixing thereto an adhesive stamp or label denoting the tax before mentioned, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall pay a fine of not more than five hundred dollars, or be imprisoned not more than six months, or both, at the discretion of the court; Provided, That no stamp tax shall be imposed upon any uncompounded medicinal drug or chemical, nor upon any medicine sold to or for the use of any person which may be mixed, or compounded for said person according to the written recipe or prescription of any practicing physician or surgeon, or which may be put up or compounded for said person by a druggist or pharmacist selling at retail only. The stamp taxes provided for in Schedule B of this Act shall apply to all medicinal articles, compounded by any formula, published or unpublished, which are put up in style or manner similar to that of patent, trade-mark, or proprietary medicine in general, or which are advertised on the package or otherwise as remedies or specifics for any ailment, or as having any

special claim to merit, or to any peculiar advantage in mode of preparation, quality, use or effect.

Rate of Stamp Tax:

Articles retailing 05 cts.—⅛ of 1 ct.

Articles retailing 10 cts.—¼ of 1 ct.

Articles retailing 15 cts.—⅜ of 1 ct.

Articles retailing 25 cts.—⅝ of 1 ct.

Articles retailing over 25 cts.—⅝ of 1 ct. for each 25 cts. or fractional part thereof.

C.—Chewing Gum or Substitutes—4 cents upon each box of retail value of $1.00 or fractional part thereof.

D.—Sparkling and other Wines—one pint, 1 cent; over one pint, 2 cents.

Articles on hand July 1, 1898, shall be subject to above rates of stamp tax, but dealers who are not manufacturers will not be required to affix the stamp *until the article is sold at retail.*

Penalty for evasion of stamp taxes:—Fine not over $500 or imprisonment not exceeding six months.

Druggists who are Dealers in Cigars and Cigarettes are affected by the Revenue Bill as follows:

On all stock on hand on the day succeeding the date of the passage of the Revenue Bill in *excess* of 20,000 cigars or cigarettes and 1,000 pounds of manufactured tobacco, return must be made under oath and delivered to the collector or deputy collector for the proper Internal Revenue District, within thirty days after the passage of the bill. Those having less than the above quantities in stock at time of its passage are not affected by this law.

Miscellaneous Stamp Taxes.—In addition to the stamp taxes already enumerated, the following are imposed:

On bonds, debentures, certificates of indebtedness, 5 cents on each $100 of face value.

On sales or agreements to sell, shares or certificates of stock, 2 cents on each $100.

On sales or agreements of sale of any products or merchandise at any exchange, 1 cent on each $100 of value.

On bank checks, drafts, certificates of deposit not drawing interest, and money orders of all kinds, 2 cents.

On each bill of exchange (inland), draft, certificate of deposit, drawing interest, promissory notes, 2 cents on each $100.

On each foreign bill of exchange and letter of credit, 4 cents on each $100.

On each bill of lading or manifest for goods sent by freight or express within the United States, 1 cent.

On each telephone message, costing 15 cents or more, 1 cent.

Doctor of Pharmacy is a new University degree which will be conferred by the School of Pharmacy of Paris.

Extract of Licorice—A sample of purified extract of licorice yielded, according to the *Helfenberger Annalen*, 1897, the following amount of constituents: water, 24·55–33·11 per cent.; ash, 6·52–11·20 per cent.; glycyrrhizin, 13·18–20·71 per cent.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A TEXT-BOOK OF BOTANY. By Dr. E. Strasburger, Dr. A. F. W. Schimper, Dr. H. Schenck and Dr. Fritz Noll. Translated from the German by Dr. H. C. Porter. With 594 illustrations, in part colored. London and New York: Macmillan & Co. 1898.

When the first edition of Strasburger's (and his associates at Bonn) "Lehrbuch der Botanik für Hochschulen" appeared in 1894, it was a matter of congratulation among botanists that such a novel and valuable work was published. That this volume was appreciated by botanists everywhere is apparent from the fact that the first edition was exhausted within a year. No one who is familiar with the German language, and has perused the original edition, can help but be struck with the conciseness and terseness of its contents, and wonder that so much could be put into but 558 pages. The task of the translator, it must be admitted, was herculean, and that he has given us a literal translation, adhering closely to the German, making neither alterations nor omissions, botanists and others not at home in the German language, and who ought to have the book, will appreciate.

The contents are divided into two parts, viz.: Part I, General Botany; and Part II, Special Botany. Under general botany are two sections: (1) morphology, including external morphology and histology, and anatomy; and (2) physiology. Under Part II are considered the cryptogams and phanerogams. The whole work is teeming with useful information for the apothecary as well as the botanist, and it is not too much to say that every intelligent pharmacist ought to have a copy for reference. In the part treating of the phanerogams are given no less than fifty or sixty illustrations (many of which are colored) of our common poisonous plants. The extreme value of this part of the work may be better appreciated by quoting the remarks at the end of the N. O. Umbelliferæ:

"POISONOUS.—*Conium maculatum*, the Poison Hemlock (*Fig. 523*), a glabrous herb, often more than a meter in height, with hollow stems and dull-green decompound leaves. The lower part of the stem is very frequently, but not always, purple-spotted. The plant is easily recognized by the wavy crenate ridges of its short, laterally-compressed fruit, and also by its disagreeable odor when bruised (resembling that of mice). *Cicuta virosa*, the Water Hemlock (*Fig. 522*), a large herb growing along the edges of ponds and ditches, is one of the most dangerous of poisonous plants. It has a turnip-like white *rhizome, full of internal cavities*, and large tripinnate leaves, with narrow lanceolate, serrate leaflets. The small white flowers are aggregated in compound umbels and produce sub-globose fruits. *Berula augustifolia* and the different species of *Sium* and *Oenanthe* are less poisonous; they are all marsh or aquatic plants. The last-named genus is easily distinguished by the absence of a carpophore. *Sium latifolium* (*Fig. 524*), which is frequently found in company with the Water Hemlock, has simply pinnate leaves, with lanceolate, sharply serrate leaflets. The Fool's Parsley, *Æthusa cynapium* (*Fig. 525*), a common weed in gardens, produces an intoxicating effect when eaten. It differs from the true parsley in having white instead of yellow flowers, *one-sided, three-leaved* (instead of six- to eight-leaved) *involucels*, and an odor of garlic."

Likewise, under Bacteria and Fungi, there are illustrations and information

which it would be difficult to secure without procuring a great many books—and even then this assimilated matter by these collaborators with Strasburger at Bonn would not be had. The part on the cell reveals the master-hand of Professor Strasburger, by whom it was written, and is an authoritative study on this subject.

UNTERSUCHUNGEN ÜBER DIE WASSERAPPARATE DER GEFÄSSPFLANZEN. Inaugural Dissertation der Hohen Philosophischen Facultät der Universität Marburg zur Erlangung der Doctorwürde vorgelegt von Otto Spanjer. Mit einer Tafel. Marburg, 1898.

The author has investigated the anatomy of the water pores of angiosperms, and endeavored to ascertain if there are not a number of anatomical types with different mechanical functions. The author distinguishes from the differences in the behavior of the fibro-vascular bundle, nature of the thickening of the cylinder sheath and character of the epithem, the following types: I. Type being Fuchsia, also Primula. II. Type as in Rosaceæ. III. Water pores in which epithem is not present, as in *Phascolus multiflorus* and *Anamirta cocculus*. IV. Epithem not developed, and transpiration takes place through the side walls of the trachea, as in *Orchis maculata*. V. Type as in Nasturtium. VI. Water pores as in *Filicineæ*.

ANNUAL REPORT ON THE YEAR 1897. By E. Merck. March, 1898.

This publication, like that of previous years, contains a report on the composition, origin and applicability of the newer remedies. It contains, also, a bibliographical index, general index, index of diseases, symptoms and indications for treatment; approximate prices of the principal remedies specified in the Report, all of which tend to enhance the value of the publication.

Under new drugs, mention is made of *Cortex Johimbehe*, the product of an Apocynaceæ, which is used as an aphrodisiac by the aborigines in the Cameroons. *Cortex Calliandræ Houstoni* (Pambotano), a substitute for quinine, which contains, according to G. Pouchet, besides saponin, an alkaloid and a resinous body. *Cortex Radicis Anchieteæ Salutaris*, a much-valued Brazilian remedy for scrofula, herpetic skin diseases, etc. *Herba Commelinæ Tuberosæ*, to the hæmostyptic properties of which attention has been repeatedly drawn by Alfonso Herrera (AM. JOUR. PHAR., 1897, p. 290). *Herba Erysimi officinalis*, which seems to have valuable properties in the treatment of catarrh of the larynx, being preferred to aconite preparations on account of its harmless nature and the rapidity and certainty of its action. *Radix Chlorostigmatis Stuckertiani*, a drug possessing powerful galactagogic properties. It contains an alkaloid, the chemical composition and pharmaceutical properties of which nothing exact is known as yet.

CHICORY GROWING AS AN ADDITION TO THE RESOURCES OF THE AMERICAN FARMER. By Maurice G. Kains. Washington: Government Printing Office.

This report also contains chapters on the adulteration and chemical analysis of chicory. The Department confidently recommends the cultivation of chicory in the mid-northern belt of our country.

OSSERVAZIONI SULLA ANALISI ELEMENTARE. Nota del ocio Icilio Guareschi e Dottor Ernesto Grande.

This is a contribution from the pharmaceutical and toxicological chemical

laboratory of the University of Turin, on the determination of the nitrogen in organic substances.

STUDIES ON THE CENTRAL AND PERIPHERAL NERVOUS SYSTEMS OF TWO POLYCHÆTE ANNELIDS. By Margaret Lewis. Reprint from Proc. Am. Acad. Arts and Sci., April, 1898.

This is a contribution from the zoological laboratory of the Museum of Comparative Zoology at Harvard College, under the direction of E. L. Mark. The author finds, among other things, a centrosome in the ganglion cells. This argues for the function of the centrosome other than that of an organ of division, and is in favor of its being a permanent cell organ.

THE ORTHOPTERAN GROUP SCUDDERIÆ. By Samuel H. Scudder. Reprinted from the Proc. Amer. Acad. Arts and Sci., April, 1898.

The author has examined more than 650 specimens of the genus Scudderia alone.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The following announcement from the Chairman, Dr. Ed. Kremers, of the Committee on Scientific Papers of the American Pharmaceutical Association has been received:

In order that the members of the American Pharmaceutical Association may derive the greatest possible benefit from the papers to be presented before the Scientific Section at the Baltimore meeting of the Association, the committee charged with the work of the Section desires to make the following announcement:

(1) Committees in the past have not always been able to arrange the programmes to their own satisfaction or that of others, largely because many persons who desired to present papers did not send to the committee the necessary information. The committee for 1898, therefore, requests that an abstract of each paper to be read before the Section be sent to the Chairman on or before August 15th. Inasmuch as an abstract can be prepared even before the paper is in final shape for reading or publication, this request does not seem to involve any hardship or injustice. In arranging the programme, preference will naturally be given to those papers whose authors have complied with this request.

(2) Authors of papers are further requested to state on the abstract how much time they will require for a satisfactory presentation of their subject. By adhering strictly to the ten-minute rule, some authors have had time to read their papers twice within the allotted time, whereas others with broad subjects were hampered in their presentation through lack of time, even if the time allotted according to rule by the chairman was graciously extended by the Section. In the presentation of papers, authors will please bear in mind that a more general presentation of many subjects is of greater value to a mixed scientific audience than a discussion of a host of details, which, though very valuable, may interest only very few.

(3) The object of scientific gatherings is not so much to read papers, for they can be read more satisfactorily at home when in print. The principal object of such gatherings is to bring men interested in related lines of work together

for expression and exchange of opinions, both formal and informal. It lies within the province of the council to see that sufficient time is left between the sessions to permit the latter. It is the duty of the Section committees to see that the former is possible. The Committee on the Scientific Section, therefore, desires to urge persons who have papers to read, whenever possible, to consider their presentation as an introduction to a more general discussion, *i. e.*, to omit unessential details in the oral report, so that greater emphasis may be laid on the outline of the work accomplished, thus evoking, if possible, a discussion by others. It will aid the committee greatly if authors will mention on their abstracts the name or names of members of the Association who are sufficiently familiar with their work to participate in a discussion, that they may be notified beforehand that the subject will come up for such discussion.

The committee is fully aware that this cannot apply in all cases, and that all papers cannot be treated alike. It hopes, however, that all members interested in the work of the Section will assist the committee in making its sessions as profitable as possible.

PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.

The twenty-first annual meeting of the Pennsylvania Pharmaceutical Association convened in the Buena Vista Hotel, Franklin County, Pa., on Tuesday, June 21, 1898. The first session was called to order by President J. H. Redsecker, at 8 P.M. About 100 persons were present. The President introduced H. J. Mentzler, of Waynesboro, who delivered an address of welcome, calling attention to the historic associations of the place, and delivering to the President the key of Franklin County. The President called upon Professor Lowe to respond to the address. Credentials were received from delegates from the New Jersey and Delaware State Pharmaceutical Associations, and from the National Wholesale Association.

The President then delivered his annual address, which was remarkable in many respects. Briefly reviewing the progress of pharmacy in the State, and calling attention to the modes of dealing with the problems that beset the retail druggist, he said, in part, the following:

"Those of us who were present at the meeting at the Delaware Water Gap a year ago, will recall with what gratification we received the news of the final passage through the Legislature of the amendment to the Pharmacy Law. Immediately after its passage the Governor was called on by a committee, which urged him to give the bill his official sanction. Your legislative committee also took prompt action in securing petitions to the same effect; but, notwithstanding all these efforts, he vetoed the bill on the 20th of June last.

"As the present law has been considered defective in some particulars, and impossible of enforcement by reason of the difficulty of procuring evidence and the lack of funds to conduct prosecutions for the violation of its provisions, I would suggest that a new bill be drafted for presentation to the next Legislature, eliminating the objectionable features of the present law and incorporating others which would be valuable. In my judgment, a law should be framed on the lines of the Medical Examiners' Bill, creating a State Pharmaceutical Council, to which should be submitted for approval the examination

questions, and providing that all fees received for examinations and registrations be paid into the treasury of the State, and all expenses incurred by the State Pharmaceutical Examining Board in carrying out the provisions of the law be paid by warrants drawn on the State Treasurer. The law should also provide that, after a certain date, say three or four years after its enactment, every person applying for a registered pharmacist's certificate, to enable him to carry on and conduct a retail pharmacy, must have had a practical experience of not less than four years in a retail pharmacy, and be a graduate of an accredited college of pharmacy which has a course of studies of not less than three years.

"The creation of a Pharmaceutical Council, to which the examination questions would be submitted for approval, would prevent any suspicion of unfairness, catch questions or favoritism on the part of the Board, and, as the law is clearly in the interests of the State, the revenue derived from it should accrue to the State, and the expenses incurred in enforcing its provisions should be paid out of its treasury. We cannot think that any one, believing in the higher education of the pharmacist, will question the propriety of registering, after a certain time, only those who are graduates in pharmacy.

"In March last a Pure Food and Drug Congress was held in the city of Washington to consider a proposed National Food and Drug Law. Among the members present from our Association were the members of the Board of Pharmacy, Mr. M. N. Kline, ex-President John F. Patton and myself. Professor Remington was appointed a delegate by the Governor, but was unable to be present. Druggists from a number of States were present. After the first session the pharmacists in attendance held a conference, and while it was the consensus of opinion that any law placing pharmacy under the Department of Agriculture was most objectionable, it was the decision of the conference that as some law would be passed in which the inspection of drugs would form a part, it would be better to try and have the proposed law so amended as to make it less objectionable than it otherwise might be. Hence, amendments were submitted by Mr. Kline and unanimously agreed to, and he was selected to present them to the Congress. After considering the bill in Congress for some time and making little progress, it was finally referred to a committee for consideration. Mr. Kline was made a member of this committee, and we were most fortunate in having him there. Too much praise cannot be accorded him for the faithful work that he did, and for his tact and ability. Every objectionable feature was stricken from the bill, and every amendment, as agreed on in conference by the pharmacists, was incorporated. One important amendment inserted was to secure the appointment of a pharmaceutical chemist for the department, under whose direction the inspection of drugs would be conducted. The bill has been introduced in both House and Senate, and will, no doubt, eventually be made a law.

"I would also call your attention to the necessity for greater effort in securing an increased membership of our State Association. I fear that the promised 100 new members will not materialize this year. The Association has been doing good work for the pharmacists of the State, and every man of them should be members and assist in maintaining the organization. If we could get them to attach themselves to the Association and form a compact and cooperating body, we would have a lever by which, based on justice and equity,

we could move the pharmaceutical world. Until some such organization is effected, we shall drift along tossed by every wind and current that affects trade. Instead of controlling circumstances, we shall be controlled by them. Not being a member of the National Wholesale Druggists' Association, I can the better refer to it as one worthy of emulation. Through their various committees they act as one man, and usually get from proprietors and legislators whatever they ask for in fairness. As an illustration of thorough organization and united action, let me remind you that in 1893 the Ohio, Indiana and Kentucky Wholesale Druggists' Association, an organization within the National Association, resolved not to handle a certain proprietary preparation because the manufacturers would not enter into the rebate agreement, and they were compelled to handle it at a loss. It was not long before the manufacturers, realizing that the jobbers were the natural distributors of their goods, promptly announced a change in their prices. They advanced their goods 10 per cent., and made a rebate of 10 per cent. to the jobbers, thus compelling the retailers to pay their obligation to the trade. A few months ago the Paris Green Association announced a price of 16½ cents a pound for green, allowing the jobber a rebate of 1½ cents a pound in largest quantities. The jobbers, through their committee, notified the Paris Green Association that they could not afford to handle the green on so small a margin. In compliance with their demand for a larger rebate, the Paris Green Association announced a rebate of 2½ cents a pound, but advanced the price 1 cent a pound, thus making the retailer pay the rebate and the profit of the jobber. Had there been a thoroughly organized and compact retail association, which could have made demands and enforced them, the manufacturers in these two, and many more instances, would not have placed the payment of their concessions to the jobber on the retailers, but would have paid it themselves.

"While I do not want to touch on the hackneyed theme of cut prices, I am convinced that until we have a thorough organization of the retail trade, which will act as one person through its various committees, we will continue to have demoralization in trade, and proprietary goods will continue to be sold at a loss. The moment the manufacturers realize that the retail trade have combined and are acting unitedly, they will devise some scheme whereby better prices will be obtained, for they are fertile in resources. But, perhaps, these ideas are entirely too Utopian, since the average retailer, whether in or out of the drug business, is but little less than foolish, as each is trying to see how little he can get for his goods, and any attempt to legislate, or by organization make him wise, would be useless.

"I am pleased to note that our relations with the Pennsylvania State Medical Society are of the most fraternal kind. The only delegate present at the late meeting of the Society was our distinguished ex-president, Charles A. Heinitsh, and unusual honors were accorded him, he being invited to a seat on the platform with the officers of the Society. We have been most fortunate in the selection of delegates to the meetings of the Society, and especially are the efforts of last year's work bearing fruit, if we may judge by the tone of the contributions to, and the editorial pages of, the *Pennsylvania Medical Journal*, the official organ of the Society. One writer, in an article of some length, condemns the use of a class of proprietary preparations intended specially for physicians, and urges that 'physicians so inform themselves concerning official and National

Formulary preparations as to make larger and more discriminating use of them, to the gradual elimination of proprietary articles from prescriptions.' In the editorial columns Dr. Kœnig, the editor-in-chief, discussing the patent medicine situation, says:

"'We believe the time is about at hand for the pharmaceutical societies to enter into closer allegiance with the medical profession. Organized pharmaceutical societies should displace the proprietary medicine man at the various meetings of medical societies. If physicians require ready-made preparations other than the pharmacopœial ones, we believe all needs may be supplied by the National Formulary preparations, and these should be prominently brought to the notice of physicians at the annual meetings.

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"'There is another aspect of the patent medicine question that should receive the attention of physicians and pharmacists, namely, that the public must have a source of supply of simples and general remedies for slight ailments. It cannot be expected of an intelligent public that the services of a physician must be had for every indisposition, when they have been taught the nature of their ailment and know the proper remedy. Medicine is no longer a mysterious calling, and the sooner physicians recognize the higher intelligence of the people of the end of the nineteenth century, the higher will the respect for the profession of medicine grow among laymen.

"'If the various patent, trade-marked and proprietary medicines intended for use by laymen were displaced by preparations of known composition, and their effects published in clear, honest statements, and sold by druggists when called for by the public, the death-blow would be struck to the proprietary remedies whose formulæ, as well as the claims made as to their medicinal properties, in the large majority of cases, are based on falsehood and misrepresentation.

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"'At the meeting of the State Medical Society, at Pittsburg, in 1897, the entire exhibit of drugs and medicines was placed in the hands of the Pennsylvania Pharmaceutical Society, and not a single trade-marked or patented remedy was shown. While the display was smaller and of a more subdued nature than at many former meetings, it was nevertheless creditable and in absolute accordance with the code of ethics. May we not hope that the Pennsylvania Pharmaceutical Association will rise to the occasion and take advantage of the favorable conditions to bring to the attention of the medical profession of the State the many eligible, though comparatively unknown pharmacopœial official remedies and the National Formulary preparations.'

"Let us hope that the work so auspiciously begun last year may be continued, the suggestion of the editor of the *Medical Times* be carried out, and, with the consent of the Medical Society, all exhibits at their future meetings be under the direction of our Association, thus bringing the two bodies into closer relations."

The address was referred to a Committee consisting of Messrs. Cliffe, Kline and Lowe. The reports of the Secretary, Treasurer, Executive and Entertainment Committees were read. The report of the Treasurer showed a comfortable balance in his hands.

At the second meeting, held on Wednesday morning, at 9.30, the first

item was the consideration of the report of the Committee on Adulterations. F. X. Moerk, the chairman, reported a flagrant substitution of sodium bicarbonate for borax; the package was a regular sodium bicarbonate keg, with the lid reversed, on which was marked 100 pounds powdered borax, etc., while on the obverse side remained the original brand of sodium bicarbonate. Two samples of extract of cannabis indica showed 8 and 40 per cent. of matter insoluble in alcohol. Considerable of the carbolic acid of the markets contains creosote, and the question was asked by the Committee: "Would it not be prudent to notify the jobbers that much of the carbolic acid on the market does not comply with the U.S.P. standard, and that the sale of such acid is illegal?"

The chairman of the Committee on Legislation, Wm. L. Cliffe, had an extended report on the work of the year. From the experience gained in connection with championing the celebrated House Bill No. 303, the Committee is of the opinion that all attempts to obtain a legislative enactment containing the restrictive features of this bill would be futile, and that if it should receive executive sanction, it would be reversed by courts of appeal. Regarding the phenacetin question the report stated: "About the first of the year your Committee, influenced largely by the expressed opinion of the Association at its last meeting, joined forces with a committee engaged in raising funds for the support of the defence in the case of Dickerson *vs.* Maurer, a Canadian phenacetin suit in Philadelphia. The attorneys engaged upon the case had prepared a defence which involved the continuance of the patent, and successful issue will render it invalid. It devolves upon the defence: (1) To show that the claim of the patent is broad enough to include many other and different compounds than the phenacetin furnished to the trade. (2) That in view of the prior publications antedating the patent, the process of manufacturing phenacetin therein described, and the product of that process, do not differ substantially from the patent and patented product, the changes described therein consisting merely in the substitution of the well-known equivalents in one step of the process. About one-half of the necessary fund has been collected, and to proceed without the necessary amount on hand or promised would be simply a waste of money contributed for a specific purpose. What will be done depends altogether upon the securing of the needed funds. It is apropos to state that the strongest financial support of the matter came from those who expressed disapproval of the use of Canadian phenacetin under existing conditions."

There was considerable discussion, particularly with the part relating to the phenacetin legislation. It was moved that the report relating to this subject be referred to a committee of three.

Other reports were read. The report from the Committee on Free Alcohol was received, and, in view of present existing conditions, the committee was discharged. A report was read by Professor Remington, representing the American Pharmaceutical Association, relative to the model pharmacy law. After considerable discussion, the general features of the bill, as presented by the Section on Pharmaceutical Education and Legislation of the American Pharmaceutical Association, were approved.

The delegates to the various associations read their reports, viz.: American Pharmaceutical Association, by Jacob A. Miller; New York State Pharmaceutical Association, by J. A. Redsecker; New Jersey Pharmaceutical Association,

by Dr. Weidemann; Maryland Pharmaceutical Association, by Dr. A. W. Miller; State Medical Association, by C. A. Heinitsh. The Committee on Papers and Queries presented a report through its chairman, C. B. Lowe. The Auditing Committee found the Treasurer's report correct, and commended his efforts in securing membership fees due the Association.

The third session was held on Thursday morning, and was devoted mainly to the reading of scientific papers. Some reports were read, viz.: on "The Glasgow Conference," by Prof. Joseph P. Remington, and on "The Flora in the Vicinity of Buena Vista Hotel," by Dr. A. W. Miller.

The following officers were elected for the ensuing year:

President, Mahlon N. Kline, Philadelphia; First Vice-President, Louis Emanuel, Pittsburg; Second Vice-President, D. J. Thomas, Scranton; Treasurer, Joseph L. Lemberger, Lebanon; Secretary, Jacob A. Miller, Harrisburg; Assistant Secretary, William L. Cliffe, Philadelphia; Executive Committee: Charles L. Hay, Du Bois; Wilbert F. Horn, Carlisle; Cyrus Jacoby, South Bethlehem.

While waiting for the Section on Papers and Queries, Professor Remington introduced Professor Simon, of Baltimore, who responded in some fitting remarks.

John F. Patton read a paper on "Pharmaceutical Organization," in which the author called attention to the advantages and benefits accruing to the pharmacists in their respective State associations, as also in the American Pharmaceutical Association. In reply to the query on "The desirability of the manufacture of a line of proprietary articles under the auspices of the Association for sale to its members at a discount," John F. Patton said: "It is not good business policy or sound ethics to sell any medicine under one's own name and not made by one's self. The responsibility is put upon us of knowing what we dispense. Let us, then, be able to vouch for the excellence of the products of our laboratory and of the therapeutic value of what we compound."

A short abstract of an article on "Saffron" was given by Henry Kraemer. The author illustrated his remarks with specimens and tests, and called attention to the advisability of the Pharmacopœia including in its tests a microchemical or chemical test with sulphuric acid, and also a characteristic botanical description distinguishing the product of crocus from carthamus.

Mr. Lemberger remarked on the fact that there was less adulteration in the saffron on the markets to-day than formerly. Dr. Miller said that saffron was largely used in coloring noodles. Mr. Lemberger said that the yolk of egg was largely used for the same purpose. Isaac M. Weills said that he had sold the American saffron for a similar use.

The next paper, on "The Volatility of Some of the Newer Remedies," by Prof. Frank X. Moerk, is printed in full on page 335 of this issue.

F. W. E. Stedem read a paper on "Cheaper Solvents."

The author experimented with the use of acetic acid and benzin. The following table is self-explanatory:

Name of Drug.	Quantity of Drug used in Grammes.	Amount of Menstruum used in C.C.	Amount of Extract Obtained in Grammes.	Cost of Drug.	Cost of Menstruum.	Cost of Extract.	List Price.
Ergot . . .	250	500	100	$0.18	$0.18	$0.09	$ .56
Gentian .	500	1,200	380	.14	.35	.035	.24
Belladonna	500	1,000	210	1.30	.32	.23	.30
Cascara . .	500	1,000	250	.18	.32	.06¼	.30

The menstruum used was 40 per cent. acetic acid. The author also exhibited preparations of Tinct. Opii Deod. which had been treated with common petroleum benzin instead of ether.

Professor Remington called attention to the fact that Tinct. Opii Deod. so made had an odor of some of the lower boiling products. Mr. Lemberger stated that he did not recognize the odor in the preparation submitted. Mr. Cliffe called attention to the fact that some of the manufacturers of assayed drugs, in supplying the drug for the manufacture of Tinct. Opii Deod., extracted it previously with benzin. Professor Remington said that the use of the benzin at this point in the operation was better than at the end, because the objectionable features were apparently overcome.

Dr. Clement B. Lowe read a paper entitled "The Influence of Drugs upon History and Civilization." He said that the influence of drugs had been manifested in several ways, viz.: (1) In promoting discovery and geographical knowledge by the search for costly drugs; (2) in opening countries to commerce and promoting intercourse between different nations; (3) in the stimulation of agriculture and commerce through their introduction into new countries; (4) in rendering habitable unhealthful parts of the world; (5) in creating new industries; (6) in influencing favor, as presents; (7) unfavorable influences upon the world. Dr. Miller remarked on the value and interest in the study of Materia Medica as presented by the author.

The remaining papers were read on Friday morning.

The first paper was on Laboratory Notes, by C. A. La Wall and Robt. C. Pursel. This is printed in full on p. 340 of this issue.

Louis Emanuel had a note on the "Sale of Poisons." In his opinion it is the duty of the Pharmacy Board to find out which of the proprietary preparations are poisonous, so that their sale may be properly regulated. He would distinguish between proprietary remedies and proprietary poisons; *e. g.*, Rough on Rats, while commonly considered a proprietary remedy, is really a proprietary poison. Louis Emanuel also had several papers relating to the "Work of the Pharmacy Board." While a practical examination was desirable, it did not seem feasible as yet. The query, "How Can a Fuller Knowledge of the Pharmacopœia be Disseminated among Physicians?" was considered in a paper by D. J. Thomas. After enumerating some of the causes which have led physicians to depart from the use of the Pharmacopœia as an auxiliary guide in their practice, the author made some recommendations which he thought would apply as a remedy to this condition. (1) He recommended that the State Pharmaceutical Association exercise its influence in getting medical colleges to attach more

importance to the Pharmacopœia and National Formulary. (2) That every city and large town should have pharmaceutical societies, not only for the mutual improvement of its members, but also for the purpose of conferring with medical societies. (3) That the work begun by the Association two years ago, at the meeting of the State Medical Society, should be continued, and that funds should be appropriated by the Association for defraying the cost of an exhibit of Pharmacopœia and National Formulary preparations at the annual meetings of the State Medical Society.

W. H. Reed suggested a plan for stopping and preventing the *cutting of prices* on proprietary medicines; the plan being for the proprietors to establish agencies throughout the country, these to be kept under the manufacturers' control as to methods of doing business, such as uniform price, to whom to sell, etc. "To these agents should be given a prescribed territory in which to sell goods, and under no circumstances allow any competition between these servants for business. These agents may be selected from the wholesale druggists, retail druggists or otherwise, but the disposal of these wares *must be* under the immediate control of the manufacturers or their association."

In a paper on "Suggested Amendments to the Pharmacy Law," Charles T. George said that the law should be so amended that the Board should have power to require an oath or affirmation from the applicant as to the truthfulness of his application for examination before a Notary Public or Justice of the Peace. It should be made or considered to be a felony for any person to fraudulently represent another, with the view of successfully passing an examination for one ignorant of the profession of pharmacy for a financial consideration, whether it be before the Pharmacy or Medical Boards of this Commonwealth. The Board should also have the power of annulling all certificates when sure that they have been obtained by false representation or fraud of any kind. The author also showed, in a paper on the "Vetoed Pharmacy Bill," that the benefits were for promoting the professional interests of the apothecary and of value to the citizens of the State.

Dr. A. R. L. Dohme read a paper on the Chemistry of Aloes. Socotrine aloes assayed 7½ per cent. aloin; Curacoa, 18½ per cent., and Cape Aloes, 4½ per cent. aloin.

Before adjourning an appropriation of $100 was made for the purpose of obtaining a legal opinion from a lawyer of national reputation on the merits of the phenatecin suit now pending.

The social features were well arranged and excellently carried out. The fact that this was a joint meeting with the Maryland Pharmaceutical Association, who were in session but five miles away, at the Blue Mountain House, Washington County, Md., added greatly to the interest and success of the meeting. On Wednesday evening the Pennsylvania delegation drove over to the Blue Mountain House and were received by the Maryland Association, and on Thursday evening the Maryland delegation were received by the Pennsylvania Association at their hotel. At the latter a very interesting musical and literary programme was arranged; of special interest were several recitations by Miss Maggie Maisch, and a surprise in store for the veteran pharmacist, Charles A. Heinitsh. This consisted in the presentation of a gold medal to Mr. Heinitsh, who has just completed fifty years of pharmaceutical service, and his many friends determined to signalize the event by presenting him a testimonial at the joint meeting of the

Pennsylvania and Maryland Associations. Prof. Remington was selected as presenter, and after alluding to his long service and the appreciation in which he was held by his friends, closed with these words: "We honor you as a pharmacist, we respect you as a merchant, but we love you as *a man.*" The medal was a work of art; on the reverse were the words, "Pharmacio filios dignos honorat;" surrounded by an olive wreath, "Charles S. Heinitsh, fiftieth anniversary;" and on the obverse, "presented by his pharmaceutical friends, 1898." Charles E. Dohme, of Baltimore, President Redsecker and M. N. Kline afterwards congratulated the veteran; in replying Mr. Heinitsh was scarcely able to control his emotion, as he warmly thanked his friends. The presentation was the incident of the evening, and the remarks of the Maryland members showed that the high regard felt for Charles A. Heinitsh was not confined to Pennsylvania.

On Friday morning the officers for the ensuing year were installed and a memorable, pleasant and profitable meeting came to a close. The next meeting will be held in Philadelphia.

OBITUARY.

Samuel H. French, Jr., who was well known in drug trade circles, died at his residence at Bryn Mawr, near Philadelphia, on April 30th, after a brief illness. He was thirty-seven years of age, being the youngest son of the late Clayton French, founder of the old drug house of French, Richards & Co. After his father's death Mr. French and Mr. Joseph Cave, both of the late firm, engaged in the manufacture of perfumery and pharmaceutical specialties, under the firm name of French, Cave & Co. This company was consolidated with the Smith, Kline & French Company about five years ago, it having existed as a separate concern about one year. After the consolidation of these two companies, Mr. French was retained as a manager in his branch of the business until last June, when he retired from active business. Mr. French was an alumnus of the Philadelphia College of Pharmacy, having graduated in 1882.

Andrew Blair, a highly respected pharmacist, died at his home in West Philadelphia on April 16th, in the 57th year of his age. His father, the late Henry C. Blair, was a most careful pharmacist, special reference having been made to the value of his methods by the late Prof. Parrish in his Treatise on Pharmacy. The son thus received an excellent training in what was to be his life-work. In addition, he took the course at the Philadelphia College of Pharmacy and graduated in 1865. In 1869 Mr. Blair was elected a member of the College, and in 1879 became a member of its Board of Trustees. He was re-elected in 1882, but resigned within the year on account of other duties.

Mr. Blair was well known in pharmaceutical circles, having been a member of the American Pharmaceutical Association and of the Pennsylvania Pharmaceutical Association. Besides he was an occasional contributor to this JOURNAL.

Mr. Blair was a member of the Presbyterian Church and was deeply interested in church work. He was also connected with a number of charitable institutions.